

## PATENT ABSTRACTS OF JAPAN

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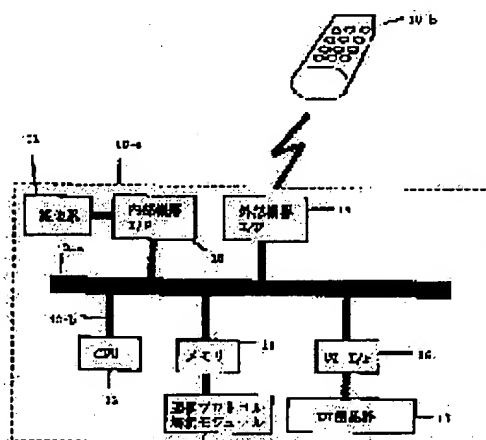
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## (54) IMAGE PICKUP DEVICE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide the image pickup device in which the cost increase attended with sophisticated functions of the image pickup device and complicated user interfaces are suppressed.

**SOLUTION:** A program sent from an external device 10-b is buffered in a buffer in a memory 14 via an external device interface 19. A CPU 13 executes a down-loaded program. The communication with an external device 10-b is managed by a communication protocol decoding module 15.



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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the expansion and remote operation using the communication facility of image pck-up equipments, such as a camera.

[0002]

[Description of the Prior Art] Since many functions are carried in equipment, the program is put on the storage in image pck-up equipment, and it is made to make it perform with image pck-up equipments, such as a camera, conventionally by loading the program to a physical memory with user interfaces arranged at equipment, such as a button and a dial.

[0003] Moreover, it is made as [ operate / by remote control / it ] by assigning the control function of a camera to an external instrument like remote control.

[0004]

[Problem(s) to be Solved by the Invention] However, the above-mentioned remote control is not [ only switching the function which the main part of a camera generally holds, and ], and does not necessarily have the effect which cuts down the memory resources and user interface resources of the main part of a camera.

[0005] On the other hand, in order to have advanced features image pck-up equipment, since various kinds of programs were stored, many memory resources were prepared, and since the user interface doubled with each function needed to be formed, complication of the user interface by forming much cost rises, switches, etc. of equipment and many part-ization had been invited.

[0006] Then, this invention aims at offering the image pck-up equipment which can suppress the cost rise of the equipment accompanying advanced features of image pck-up equipment, and complication of a user interface.

[0007]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, this invention carries out having established the means of communications which communicates with an external instrument, a program download means to download a program from the above-mentioned external instrument through the above-mentioned means of communications, and a program execution means to perform the above-mentioned program downloaded by the above-mentioned program download means as the feature in the image pck-up equipment which has a storage means.

[0008] Moreover, you may make it establish further a download prohibition means to forbid download of the same program as the program already downloaded by the above-mentioned program download means.

[0009]

[Function] According to this invention, a program downloads from a computer or an external instrument like remote control to image pck-up equipment, and the program execution is made by the program execution means. Therefore, it becomes possible to hold down to necessary minimum, without forming many buttons for giving a margin to the memory resources by the side of image pck-up equipment, and

directing realization of each function, and tools of a user interface called a dial, since it is not necessary to make the storage means of image pck-up equipment memorize the program of each function beforehand.

[0010]

[Embodiments of the Invention] Hereafter, the operation gestalt of this invention is explained using a drawing. Drawing showing the example of the image pck-up structure of a system for which drawing 1 carried out this invention, the flows-of-control \*\*\*\* view of a system [ in / the example of a system configuration of drawing 1 / in drawing 2 ], and drawing 3 are drawings showing the flow of the preliminary communication state in the above-mentioned flows of control.

[0011] In the image pck-up system of drawing 1 , image pck-up equipment 10-a possesses the image pck-up system 11, CPU13, memory 14, the part group 17 for user interfaces and the user interface 16, the interface 18 for internal devices, and the interface 19 for external instruments, and each module is connected by system bus 12-a and local bus 12-b.

[0012] The image pck-up equipment 10-a main part is constituted by the interface 19 for external instruments so that external instrument 10-b and communication may be possible. Moreover, the communications protocol interpretive module 15 which interprets a communications protocol with external instrument 10-b is assigned to the memory 14 which consists of RAM, for example.

[0013] In the communications protocol interpretive module 15 in the memory 14 of this example, communication with the signal outputted and inputted through the external instrument interface 19, i.e., external instrument 10-b, is always managed. In addition, the communication system between an image pck-up equipment 10-a main part and an external instrument 10-b does not ask a cable and radio.

[0014] Although it is necessary to establish a communication path first in order for an image pck-up equipment 10-a main part and external instrument 10-b to communicate, communication in the meantime is attained by the communications protocol interpretive module 15 in memory 14.

[0015] Where a communication path is established, the case where the function (funcl) carried in external instrument 10-b to image pck-up equipment 10-a is performed is explained using drawing 2 .

[0016] The state where the communication process of CPU13 is waiting for the signal from the external instrument interface 19 is in the start state 20 shown in drawing 2 . If a signal is received from the external instrument interface 19, next, it will change in the preliminary communication state 21.

[0017] The flow in a preliminary communication state is shown in drawing 3 . The initial state of a preliminary communication state is in the start state 30. Then, it changes to the memory reference processing 31, and the memory 14 in a main part is checked. It is confirmed first whether, at this time, a function (funcl) exists in the buffer in memory 14 (processing 32). When this function (funcl) already exists, it changes in the preliminary communication end state 37, and a preliminary communication state is ended. On the other hand, when the function (funcl) does not exist in the buffer in memory 14, next, the availability (sp\_buf) of a buffer confirms whether program size (p\_size) \*\* is also large (processing 33). When a program size (p\_size) is larger than the availability (sp\_buf) of a buffer, it changes in the preliminary communication end state 37, and a preliminary communication state is ended.

[0018] When a program size (p\_size) is smaller than the availability (sp\_buf) of a buffer, the flag (buf) for buffering the program to be loaded from now on in the memory 14 in a main part is set up (processing 34). Next, when it judges whether the setup so far was completed normally (processing 35) and does not end normally, an error signal is sent out to external instrument 10-b which becomes a communications partner through the external instrument interface 19 (processing 36), and it changes in the start state 30 which is an initial state. On the other hand, when it ends normally, it changes in the preliminary communication end state 37, and a preliminary communication state is ended.

[0019] After preliminary communication is completed, a communication process changes in the protocol interpretation state 22 to perform external instrument 10-b and communication using the communications protocol interpretive module 15 currently assigned to the memory 14 in a main part. The function (funcl) loaded using the protocol checks the buffering flag buf (processing 34 reference of drawing 3 ) set up in the state of preliminary communication (processing 23). When [ which is not ] the buffering flag buf is not set up (i.e., when the empty buffer in the memory 14 in a main part is not

enough), it changes to the judgment processing 25 of an end state, without buffering. Moreover, when the buffering flag buf is set up, the loaded program is buffered to the buffer in the memory 14 in a main part (processing 24), and it changes to the end state judging processing 25. In addition, it says that buffering makes the loaded program store in the buffer in memory 14 here. When the flow so far is not completed normally, through the external instrument interface 19, an error signal is sent out to external instrument 10-b (processing 26), and it changes in the start state 20 which is an initial state. When it ends normally, loaded program execution is performed (processing 27).

[0020] Thus, the function can be made to realize by transmitting to image pck-up equipment 10-a from external instrument 10-b to realize the function which image pck-up equipment 10-a does not have beforehand. Moreover, the function used frequently turns into that it is possible to perform program execution easily by buffering the program once loaded in communication, without loading repeatedly (the processing 32 of drawing 3 , and processing 24 reference of drawing 2 ). Moreover, [0021] not only switching of image pck-up equipment 10-a by external instrument 10-b but the remote operation of functions other than switching of is attained as a result Operation form 1] besides [ Although the communication process in the above-mentioned operation form was started from the signal waiting state from external instrument 10-b In communication (initial communication) of the beginning of an image pck-up equipment 10-a main part and external instrument 10-b By receiving as a list all the programs that external instrument 10-b can have beforehand, communication is started from an image pck-up equipment 10-a main part, and it also becomes possible from an external instrument to download a program actively.

[0022] Operation form 2] besides [ The external instrument of not only external instrument 10-b but two or more kinds and communication are possible for the external instrument interface 19 in the above-mentioned operation form as a communications partner. This is technology which is the protocol which IrDA which is the standardization organization of infrared ray communication defined, and network protocols, such as TCP/IP, and has already been realized. In this case, it becomes possible to also make it act to another external instrument in addition to making the loaded program reflect in the image pck-up equipment 10-a main part itself.

[0023] This example is shown in drawing 4 . In this drawing, image pck-up equipment 40 considers as the thing in which remote control 41 and a printer 42, and communication are possible. Image pck-up equipment 40 downloads the printer driver of the pro GURAPU cotton linter which is not probably illustrated by communication in remote control 41 and the above-mentioned operation form. By transmitting the image data photographed to the printer driver to a printer 42, it becomes possible from image pck-up equipment 40 to perform direct printing of image pck-up equipment 40 to a printer 42.

[0024] In addition, you may be external memory with this invention applicable to various image pck-up equipments, such as not only a camera but a camcorder/movie, a still camera, etc., and, such as not only the internal memory 14 prepared in the image pck-up equipment 10-a main part like the example above-mentioned [ a storage means ] but memory card. Moreover, you may constitute so that the elimination function of the program stored in the buffer of memory 14 may be given if needed.

[0025]

[Effect of the Invention] Since according to this invention it is constituted so that a program may be downloaded and executed from a computer or an external instrument like remote control, while not making a storage means able to memorize the program of the varieties for realizing each function and being able to use the cheap small storage means of storage capacity as a storage means, the part mark of the user interface for making each function realize can be reduced. Therefore, while being able to suppress the cost rise of the equipment accompanying advanced features of image pck-up equipment, and complication of a user interface, various kinds of remote operation of the image pck-up equipment by the external instrument is also realizable.

[0026] Moreover, when a download prohibition means is established, duplication of loading of the same program can be avoided and an efficient execution environment can be realized.

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**PRIOR ART**

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TECHNICAL PROBLEM

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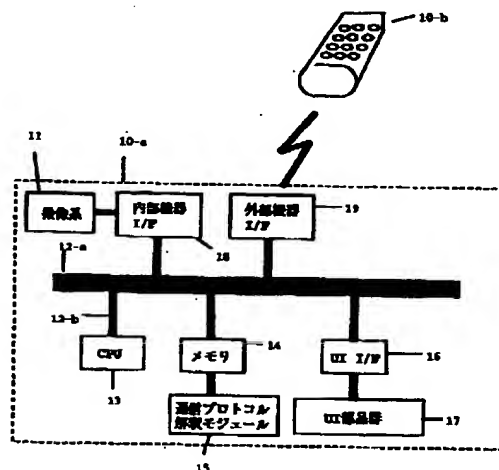
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(54) 【発明の名称】 撮像装置

(57) 【要約】

【課題】 撮像装置の高機能化に伴う装置のコストアップ及びユーザーインターフェースの複雑化を抑制することができる撮像装置を提供する。

【解決手段】 外部機器10-bから送信されたプログラムは外部機器インターフェース19を介してメモリ14内のバッファにバッファリングされる。CPU13はダウンロードされたプログラムを実行する。外部機器10-bとの通信は通信プロトコル解釈モジュール15により管理される。



1

## 【特許請求の範囲】

【請求項1】 記憶手段を有する撮像装置において、外部機器と通信を行う通信手段と、上記通信手段を介して上記外部機器からプログラムをダウンロードするプログラムダウンロード手段と、上記プログラムダウンロード手段によりダウンロードされた上記プログラムを実行するプログラム実行手段とを設けたことを特徴とする撮像装置。

【請求項2】 上記プログラムダウンロード手段によりすでにダウンロードされたプログラムと同一のプログラムのダウンロードを禁止するダウンロード禁止手段を更に設けたことを特徴とする請求項1記載の撮像装置。

## 【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、カメラ等の撮像装置の通信機能を利用した機能拡張および遠隔操作に関するものである。

【0002】

【従来の技術】従来、カメラ等の撮像装置では、多くの機能を装置に搭載するために、撮像装置内の記憶装置にプログラムを載せておき、装置に配置されたボタン、ダイヤル等のユーザーインターフェースによりそのプログラムを実メモリにロードして実行させるようにしている。

【0003】また、リモコンのような外部機器にカメラの制御機能を割り付けることにより、遠隔操作が可能になされている。

【0004】

【発明が解決しようとする課題】しかしながら、上記リモコンは一般にカメラ本体が保持している機能のスイッチングを行うのみであり、カメラ本体のメモリ資源およびユーザーインターフェース資源を削減する効果を持っているわけではない。

【0005】一方、撮像装置を高機能化するためには、各種のプログラムを格納するために多くのメモリ資源を用意し、各機能に合わせたユーザーインターフェースを設ける必要があることから、装置のコストアップ及びスイッチ等を多数設けることによるユーザーインターフェースの複雑化、多部品化を招来していた。

【0006】そこで本発明は、撮像装置の高機能化に伴う装置のコストアップ及びユーザーインターフェースの複雑化を抑制することができる撮像装置を提供することを目的とする。

【0007】

【課題を解決するための手段】上記目的を達成するために、本発明は、記憶手段を有する撮像装置において、外部機器と通信を行う通信手段と、上記通信手段を介して上記外部機器からプログラムをダウンロードするプログラムダウンロード手段と、上記プログラムダウンロード手段によりダウンロードされた上記プログラムを実行す

2

るプログラム実行手段とを設けたことを特徴とする。

【0008】また、上記プログラムダウンロード手段によりすでにダウンロードされたプログラムと同一のプログラムのダウンロードを禁止するダウンロード禁止手段を更に設けるようにしても良い。

【0009】

【作用】本発明によれば、コンピュータやリモコンのような外部機器からプログラムが撮像装置にダウンロードされ、プログラム実行手段によりそのプログラムの実行がなされる。従って、各機能のプログラムを予め撮像装置の記憶手段に記憶させておく必要がないので、撮像装置側のメモリ資源に余裕を与え、各機能の実現を指示するためのボタン、ダイヤルといったユーザーインターフェースの道具を数多く設けることなく、必要最小限に抑えることが可能になる。

【0010】

【発明の実施の形態】以下、図面を用いて本発明の実施形態を説明する。図1は本発明を実施した撮像システムの構成例を示す図、図2は図1のシステム構成例におけるシステムの制御フローを示す図、また図3は上記制御フローにおける予備通信状態のフローを示す図である。

【0011】図1の撮像システムにおいて、撮像装置10-aは撮像系11、CPU13、メモリ14、ユーザーインターフェース用部品群17およびユーザーインターフェース16、内部機器用インターフェース18、外部機器用インターフェース19を具備しており、各モジュールはシステムバス12-aおよびローカルバス12-bによって接続されている。

【0012】撮像装置10-a本体は外部機器用インターフェース19により外部機器10-bと通信可能なように構成されている。また例えばRAMからなるメモリ14には外部機器10-bとの通信プロトコルを解釈する通信プロトコル解釈モジュール15が割り当てられている。

【0013】本実施例のメモリ14内の通信プロトコル解釈モジュール15では、外部機器インターフェース19を介して入出力される信号、すなわち外部機器10-bとの通信が常に管理されている。なお、撮像装置10-a本体と外部機器10-b間の通信系は有線、無線を問うものではない。

【0014】撮像装置10-a本体と外部機器10-bが通信を行なうために、まず通信経路を確立する必要があるが、この間の通信はメモリ14内の通信プロトコル解釈モジュール15により達成される。

【0015】通信経路が確立された状態で、撮像装置10-aに対し外部機器10-bに搭載されている機能(func1)を実行させる場合を図2を用いて説明する。

【0016】CPU13の通信プロセスが外部機器インターフェース19からの信号を待っている状態が図2に



5

憶手段を用いることができると共に、各機能を実現させるためのユーザーインターフェースの部品点数を減らすことができる。従って、撮像装置の高機能化に伴う装置のコストアップ及びユーザーインターフェースの複雑化を抑制することができると共に、外部機器による撮像装置の各種の遠隔操作も実現できる。

【0026】また、ダウンロード禁止手段を設けた場合には、同一プログラムのロードの重複を避け、効率的な実行環境を実現することができる。

【図面の簡単な説明】

【図1】本発明が実施された撮像システムの一構成例を示す図である。

【図2】撮像システムにおける処理のフローを示す図である。

【図3】予備通信状態における処理のフローを示す図である。

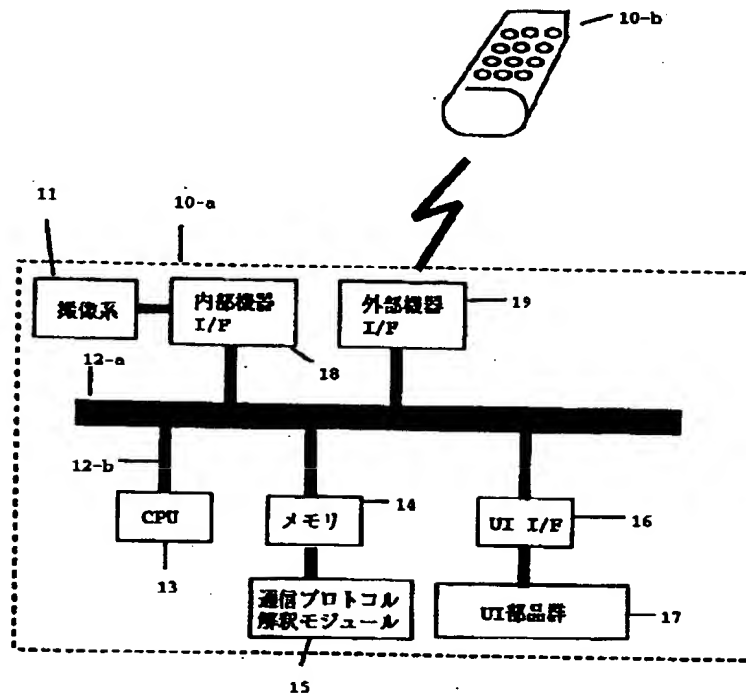
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【図4】撮像装置を介した他の外部機器の制御例を示す図である。

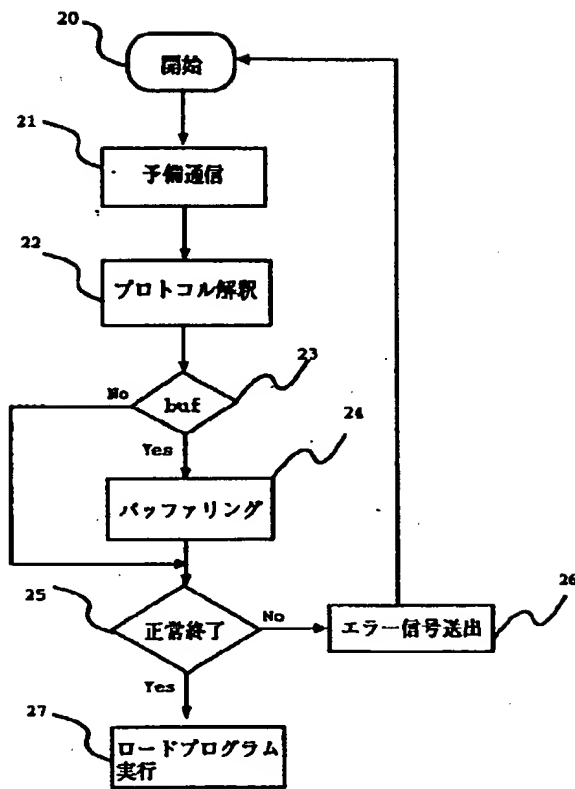
【符号の説明】

- 10-a 撮像装置
- 10-b 外部機器
- 11 撮像系
- 12-a システムバス
- 12-b ローカルバス
- 13 CPU
- 14 メモリ
- 15 通信プロトコル解釈モジュール
- 16 ユーザーインターフェース
- 17 ユーザーインターフェース用部品群
- 18 内部機器用インターフェース
- 19 外部機器用インターフェース

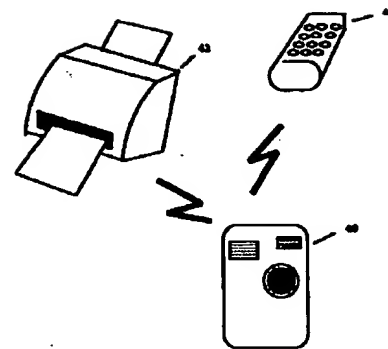
【図1】



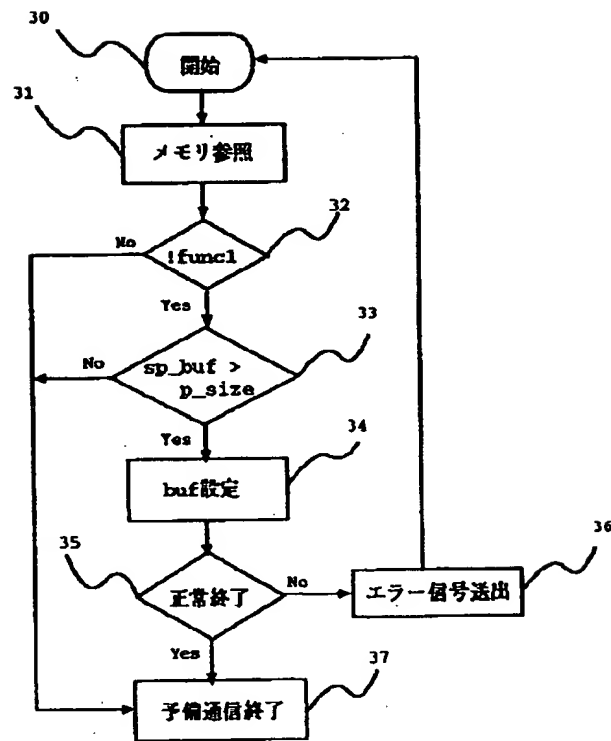
【図2】



【図4】



【図3】



フロントページの続き

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